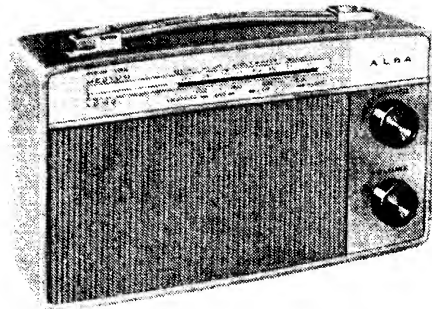


"TRADER" SERVICE SHEET
1757

ALBA 777 "Swan"

Two-waveband Transistor Portable Radio Receiver



Appearance of the Alba 777 "Swan"

A LBA 777 "Swan" is a two-waveband transistor portable radio receiver which operates from a 9V dry battery. It incorporates a ferrite rod aerial and is fitted with a socket for the connection of an external aerial if required.

Six transistors and two crystal diodes are employed in a conventional circuit using a Class B push-pull output stage.

Release date and original price: May 1963, £11 6s. 3d. Purchase tax extra.

CIRCUIT VOLTAGES

Circuit voltages quoted below were taken from information supplied by the

manufacturer. They were measured on a model 8 Avometer using the 2.5V d.c. and 10V d.c. ranges.

TR1 emitter voltage; 1.2V with the oscillator functioning, 0.72V with no oscillator.

TR2 emitter voltage; 0.01V when tuned to a signal, 0.7V with no signal.

TR3 emitter voltage; 0.88V.

Voltage measured across C18; 6.7V.

Total battery current with no signal input; 12mA.

CIRCUIT DESCRIPTION

Signals induced in the ferrite rod aerial are tuned by L4, TC1 and VC1 (m.w.), and L2, C2, TC1 and VC1 (l.w.). Inductive coupling from the ferrite rod aerial to the base of the self-oscillating mixer TR1 is obtained by L5 and L3. Signals from the external aerial socket are coupled to the ferrite rod via L1. Base bias for TR1 is derived from the potential divider R1, R2 in conjunction with the emitter stabilising resistor R4.

Oscillator signals are developed from feedback from collector to emitter via L6, L7 and C6. Oscillator frequency is determined by L7, TC3 and VC2 (m.w.) with TC2 and C7 added in parallel (l.w.).

Resultant i.f. signals at 470kc/s in TR1 collector are developed across L9 and coupled via L10 to a two-stage i.f. amplifier comprising TR2 and TR3 with associated coupling transformer L11, L12.

Amplified output from TR3 is applied via L13, L14 to the detector diode D2 which operates with slight initial forward bias, derived from the potential dividing network R6, R10 and VR1, to improve its sensitivity.

(Continued overleaf col. 1)

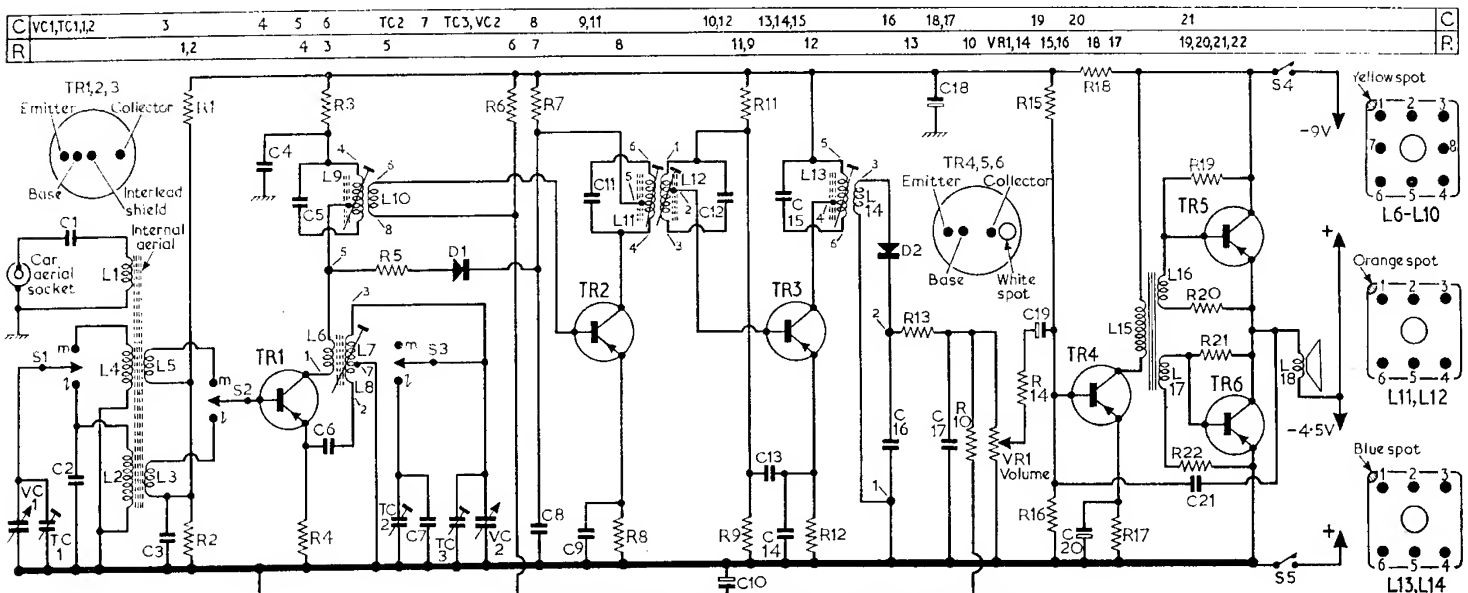
Resistors			Capacitors		
R1	39kΩ	B1	C1	18pF	B1
R2	6.8kΩ	B1	C2	70pF	C1
R3	100Ω	B1	C3	5,000pF	B1
R4	1kΩ	B1	C4	0.1μF	B1
R5	680Ω	B1			
R6	56kΩ	B1			
R7	2.2kΩ	B2			
R8	680Ω	B2			
R9	4.7kΩ	B2			
R10	8.2kΩ	B1			
R11	22kΩ	B2			
R12	1kΩ	B2			
R13	680Ω	A2			
R14	1.2kΩ	A2			
R15	27kΩ	A2			
R16	8.2kΩ	A2			
R17	330Ω	A2			
R18	560Ω	A2			
R19	2.7kΩ	A1			
R20	25Ω	A1			
R21	2.7kΩ	A1			
R22	25Ω	A1			
VR1	5kΩ	A2			

Transistors		
TR1	AF117	B1
TR2	AF117	B2
TR3	AF117	B2
TR4	OC81D	A1
TR5	OC81	A1
TR6	OC81	A1

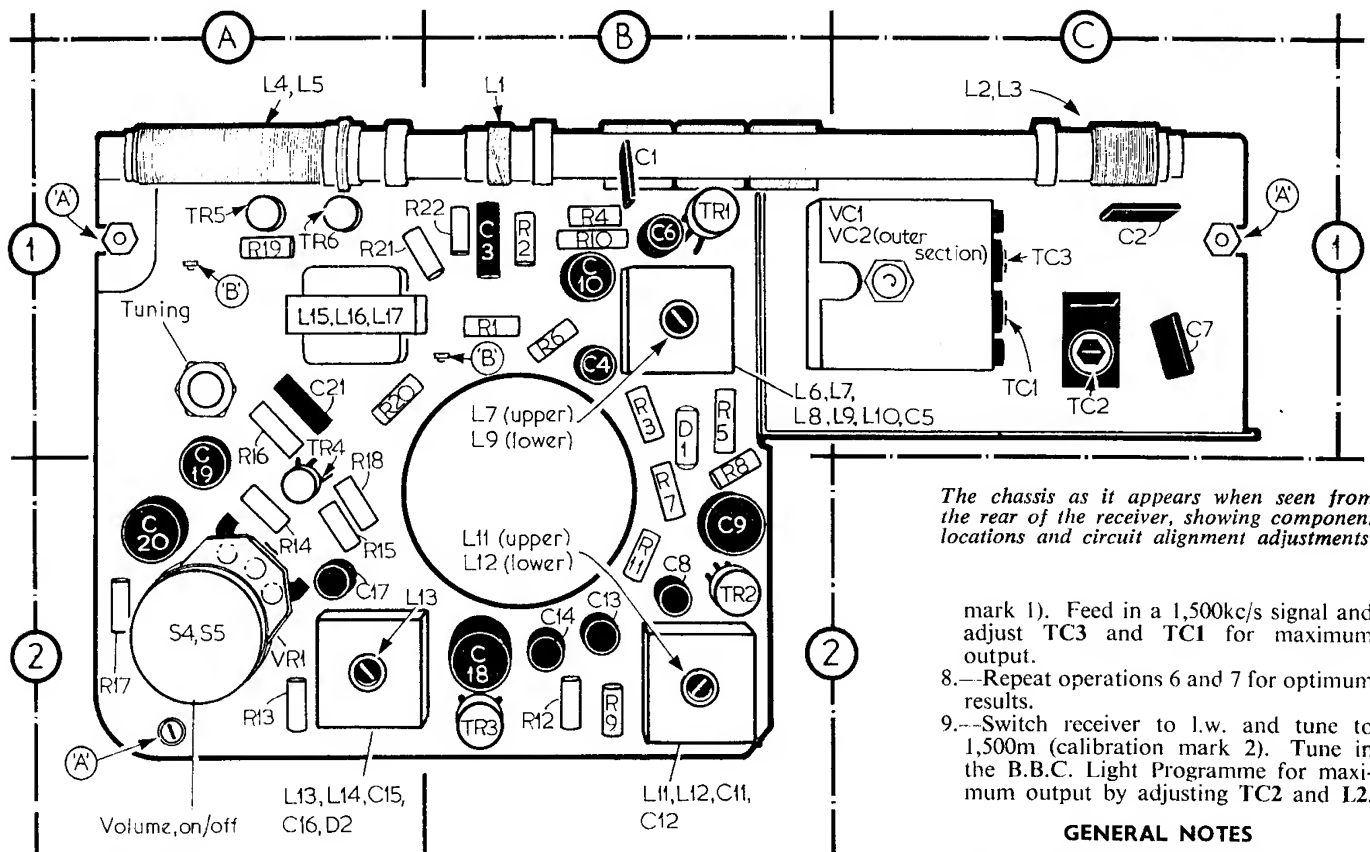
Coils*		
L1	—	B1
L2	—	C1
L3	—	C1
L4	—	A1
L5	—	A1
L6	—	B1
L7	—	C1
L8	—	B1
L9	—	C1
L10	—	B2
L11	—	B2
L12	—	B2
L13	—	A2
L14	—	A2
L15	230	A1
L16	75	A1
L17	75	A1
L18	25	—

Miscellaneous		
D1	OA70	B1
D2	OA70	A2
SI-S3	—	—
S4, S5	—	A2

* Approximate d.c. resistance in ohms.



Circuit diagram of Alba 777 transistor portable radio receiver.



The chassis as it appears when seen from the rear of the receiver, showing component locations and circuit alignment adjustments.

- mark 1). Feed in a 1,500kc/s signal and adjust TC3 and TC1 for maximum output.
- 8.—Repeat operations 6 and 7 for optimum results.
- 9.—Switch receiver to l.w. and tune to 1,500m (calibration mark 2). Tune in the B.B.C. Light Programme for maximum output by adjusting TC2 and L2.

GENERAL NOTES

Dismantling.—Removal of the case back, by taking out two screws at the top and pulling the centre flap, will provide access to the battery and the component side of the printed circuit panel.

To remove the printed circuit panel for access to the foil side and drive system, and for alignment purposes, first pull off the two front control knobs.

Remove the Phillips screw and two hexagonal nuts, marked "A" on the chassis illustration.

Unsolder the leads from the external aerial socket and unplug the two speaker leads from tags "B" on the printed panel.

Withdraw the complete chassis assembly from the case, easing the press-buttons through their cabinet aperture.

Battery.—Ever Ready PP11 or equivalent.

Drive Cord Replacement.—A sketch of the drive cord system is shown at the foot of the page. To fit a replacement cord, turn the tuning gang to maximum and route the new cord as shown in the diagram. On completion, the cursor should be aligned so that it covers calibration notch 4 with the tuning gang fully meshed.

Circuit Description—Continued

Audio output from D2 is filtered by the network R13, C16 and C17 and developed across the diode load resistor and volume control VR1 and from the slider of the volume control via C19 to the base of the driver TR4.

The positive d.c. voltage which appears across VR1 is fed via R10 to the base of TR2 to reduce its forward bias and consequently the gain, thus providing a.g.c. This a.g.c. is augmented by the diode D1 which conducts on strong signals effectively damping L9 by shunting it with a low resistance.

The primary of the phase-splitting transformer L15 is connected in TR4 collector and couples the audio signal via the split secondary L16, L17, in anti-phase, to the bases of the single-ended push-pull output transistors TR5 and TR6. The 25Ω loudspeaker speech coil L18 forms the output load. Forward base bias for TR5 and TR6 is provided by the network R19, R20, R21 and R22 and negative feedback is applied via C21.

CIRCUIT ALIGNMENT

For circuit alignment it is necessary to remove the printed circuit panel as described under "Dismantling". Calibration markers, provided on the scale backing plate in the form of notches, are identified in the illustration of the scale drive assembly.

Equipment Required.—An a.m. signal generator; an audio output meter with an impedance to match 25Ω; an r.f. coupling loop and suitable trimming tools.

1.—Connect the audio output meter across

the loudspeaker leads. During alignment the signal input level should be adjusted to maintain a receiver output of 5mW. Connect the signal generator across the tuning gang aerial section VC1.

- 2.—Switch receiver to l.w. and rotate the tuning gang to the fully open position. Turn the volume control to maximum.
- 3.—Feed in a 470kc/s 30 per cent modulated signal and adjust the cores of L13, L12 (lower), L11 (upper) and L9 (lower) in that order for maximum output.
- 4.—Repeat operation 3 using a reduced signal input for optimum results.
- 5.—Connect the signal generator to an r.f. coupling loop and place the loop about 12in from the receiver, coaxial with the ferrite rod aerial windings. Check that when the tuning gang is at maximum capacitance, the cursor is in line with the end calibration mark (notch 4).
- 6.—Switch receiver to m.w. and tune to 500m (calibration mark 3). Feed in a 600kc/s signal and adjust L7 (upper) then L4 for maximum output.
- 7.—Tune receiver to 200m (calibration

Illustration of the scale drive assembly as seen from the front: When routing a new cord, note the relative positions of the tuning gang, drive drum and cursor. Calibration notches 1 to 4 are cut in the scale backing plate.

